Claims

1. An oxirane derivative represented by the following general formula [1]:

$$RO(C_2H_4O)nH \qquad [1]$$

wherein R represents a C_{1-7} hydrocarbon group; and n represents the average number of moles of oxirane groups added, ranging from 20 to 900, ~~characterized in that~~ Wherein the following requirements are satisfied:

(A) Supposing that the straight line between the elution starting point and the elution end point on a chromatogram obtained by gel permeation chromatography is PbaseL, the total peak area above PbaseL is Parea, the height of the top of the maximum peak of refractive index: Ptop, with respect to PbaseL is PtopH, and the peak area between the point at which the height of the elution curve from the elution starting point toward Ptop, with respect to PbaseL is 1/5 of PtopH and the point at which the height of the elution curve from Ptop toward the elution end point, with respect to PbaseL is 1/5 of PtopH is PareaM, Parea and PareaM satisfy the following relationship:

$$PareaM/Parea \geqq 0.85$$

; and

(B) When thin layer chromatography is effected by development with a 85 : 15 (by volume) mixture of chloroform and methanol, followed by color development with iodine and measurement of the purity of various spots by a densitometer, main spots having Rf ~~value~~ values falling within the range of from 0.2 to 0.8 have a purity of not less than 98%.

2. The oxirane derivative according to Claim 1, wherein

61

Parea and PareaH satisfy the following relationship:

$$PareaH/Parea \leqq 0.05$$

where PareaH is the peak area between the elution starting point on a chromatogram and the point at which the height of the elution curve toward Ptop from PbaseL is 1/5 of PtopH.

3. The oxirane derivative according to Claim 1 or 2, wherein the number of moles of oxirane added PtopEOmol determined by the following equation:

$$PtopEOmol = (PtopMw - ROHMw)/44$$

supposing that the molecular weight corresponding to the top of the peak on a chromatogram is PtopMw and the molecular weight of the compound ROH (in which R represents a C_{1-7} hydrocarbon atom) to be used as a starting material is ROHMw, satisfies the following relationship with the ratio PMmw/mn of weight-average molecular weight to number-average molecular weight of the region represented by PareaM determined by gel permeation chromatography:

$$PMmw/mn - [1 + PtopEOmol/(1 + PtopEOmol)^2] \leqq 0.02.$$

4. The oxirane derivative according to ~~any one of Claims 1 to 3,~~ Claim 1 or Claim 2 wherein R in the general formula [1] is CH_3.

5. A process for the preparation of an oxirane derivative defined in any one of Claims ~~1~~ to 3, characterized in that the water content in the reaction system where the compound ROH (in which R represents a C_{1-7} hydrocarbon group) and oxirane react with each other is not more than 5 ppm.

6. The process for the preparation of an oxirane derivative according to Claim 5, wherein R in the general formula [1] is CH_3.

7. An oxirane derivative represented by the following general formula [2] prepared from an oxirane derivative as defined in ~~any one of Claims (1) to (4)~~ claim 1 or claim 2 as a starting material:

$$RO(C_2H_4O)n\text{-}Xp\text{-}Y \qquad [2]$$

wherein R represents a C_{1-7} hydrocarbon group; n represents an integer of from 20 to 900; X represents a C_{1-3} hydrocarbon group or $-CO(CH_2)q-$ (in which q is an integer of from 2 to 4); Y represents an amino group or carboxyl group; and p represents 0 or 1.